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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/973,140 | 10/09/2001 | Ralph Thomas Hocitor | RD-27,855 | 7372 |
| 41838 | 7590 | 05/25/2005 | EXAMINER | |
| GENERAL ELECTRIC COMPANY (PCPI) C/O FLETCHER YODER P. O. BOX 692289 HOUSTON, TX 77269-2289 | | | ZEWDU, MELESS NMN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2683 | |

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|------------------------------|------------------------|---------------------|--|
| | 09/973,140 | HOCTOR ET AL. | |
| | Examiner | Art Unit | |
| | Meless N. Zewdu | 2683 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 03 January 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-4 and 7-21 is/are rejected.

7) Claim(s) 5-6 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. _____
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____

DETAILED ACTION

Response to Amendment

1. This action is in response to the communication filed on 1/3/05.
2. Claims 1-21 are pending in this action.
3. This action is final.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. (6,522,882).

Regarding claim 1, Chen et al. discloses a method for determining a location of an object within an area of interest (abstract, fig. 1), comprising:

- a) transmitting an RF signal from the object to at least three receivers (at least some or plurality of cell sites) (abstract, fig. 1, col. 5 lines 9-53);

- b) transmitting a signal from at least one beacon transmitter to the at least three receivers, said at least one beacon transmitter being at a known location (abstract, fig. 1, col. 5 lines 9-53);
- c) calculating, at each of the at least three receivers, time difference of arrival information based on the signal from said at least one beacon transmitter and the RF signal transmitted from the object (abstract, fig. 1, col. 5 lines 34-53); and
- d) determining a location of the object within said area of interest based on said time difference of arrival information (col. 5 lines 34-37).

Regarding claim 13, Chen et al. discloses a system for determining a location of an object within an area of interest (abstract, fig. 1), comprising:

- a) a mobile device carried by said object (abstract, #18 fig. 1, col. 5 lines 9-53), said mobile device including a transmitter for transmitting an RF signal (#18 fig. 1);
- b) at least one beacon transmitter at a known location for transmitting a beacon signal (abstract);
- c) at least three base stations within said area of interest (abstract), each of said at least three base stations comprising a detector for detecting the RF signal transmitted from said mobile device (col. 1 line 40-47), and further comprising a processor for deriving time difference of arrival information based on the beacon signal and the RF signal (col. 3 lines 40-67); and
- d) a controller for determining the location of the object within said area of interest based on the time difference of arrival information calculated by each of the three base stations (col. 5 lines 34-53).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-4, 7-12, and 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (6,522,882) in view of Richards et al. (6,466,125).

Regarding claim 2, Chen et al. further discloses the method of claim 1, wherein said RF signal comprises a signal (abstract). However, Chen et al. does not specifically disclose RF signal comprises a frequency ultra-wideband signal.

Richards et al. teaches the RF signal comprises a frequency ultra-wideband signal (col. 4 line 4-8). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the Chen et al. system with the teaching of Richards et al. of the RF signal comprises a frequency UWB in order to determine the location of the patient in the area of interest.

Regarding claim 3, Richards et al. further discloses the method of claim 2, wherein said ultra-wideband signal comprises a transmitted-reference ultra-wideband signal (col. 31 line 21 thru col. 37 line 25).

Regarding claim 4, Chen et al. further discloses the method of claim 1 wherein the step of determining a location of the object comprises using a maximum likelihood algorithm (when calculating the location of the mobile transceiver from the respective location of each of the at least some of the plurality of cell sites and respective times at which the beacon signal was received at each of the at least some of the plurality of cell sites which means it using a maximum likelihood algorithm) (abstract).

Regarding claim 7, Richards et al. further discloses the method of claim 2, wherein said ultra-wideband signal comprises a transmitted-reference, delayed hopped ultra-wideband signal (col. 11 line 8-67); and wherein the step of transmitting a transmitted-reference, delayed hopped ultra-wideband signal comprises generating pairs of pulses separated by a time interval D and encoding by relative polarity of pulses of said pairs (col. 11 line 8-67); and wherein the step of calculating time difference of arrival information comprises delaying received signals by the time interval D (col. 13 line 65 thru col. 14 line 11).

Regarding claim 8, Richards et al. further discloses the method of claim 7 wherein the step of transmitting further comprises generating the pairs of pulses at a pulse repetition rate which is variable in order to shape a spectrum of transmission (fig. 4, col. 6 line 17-35).

Regarding claim 9, Richards et al. further discloses the method of claim 7 wherein transmitted-reference, delayed hopped ultra-wideband signals are transmitted from a plurality of objects, each transmitted-reference, delayed hopped ultra-wideband

(impulse) signal having a different time interval D between pulses of said pairs (col. 6 line 17 thru col. 7 line 38).

Regarding claim 10, Richards et al. further discloses the method of claim 2, wherein the step of transmitting the ultra-wideband signal is performed by a transmitter carried by a patient, and wherein said area of interest is a medical facility (abstract).

Regarding claim 11, Richards et al. further discloses the method of claim 9, wherein the step of transmitting the ultra-wideband signal further includes transmitting medical information of said patient with the ultra-wideband signal (fig. 12, col. 21 lines 53-63).

Regarding claim 12, Richards et al. further disclose the method of claim 2, wherein the step of transmitting the ultra-wideband signal is performed by a transmitter attached to patient, and wherein said area of interest is a medical facility (abstract, fig. 10-13, col. 19 lines 56-64). However, Richards et al. does not specifically disclose the transmitter attached to equipment. But, it would have been obvious to one skilled in the art that the device can be used to attach to the equipment in order to monitor the equipment from removing.

Regarding claim 14, this claim is rejected for the same reason as set forth in claim 2.

Regarding claim 15, this claim is rejected for the same reason as set forth in claim 3.

Regarding claim 16, Richards et al. further discloses the system of claim 13, wherein said ultra-wideband signal comprises a transmitted reference, delayed hopped

ultra-wideband signal (col. 11 line 8-67), and said detector comprises a pulse-pair correlator (fig. 2, col. 4 lines 38-67).

Regarding claim 17, this claim is rejected for the same reason as set forth in claim 8.

Regarding claim 18, Chen et al. further discloses the system of claim 13. However, Chen et al. does not specifically disclose wherein a plurality of mobile devices transmit RF signals to the at least three base stations, each of the three base stations comprising a plurality of detectors for detecting the RF signals and deriving time difference of arrival information based on the beacon signal and the RF signals, said controller determining locations of said objects based on said time difference of arrival information.

Richards et al. teaches a plurality of mobile devices transmit RF signals to the at least three base stations (fig. 1-6, col. 8 line 56 thru col. 12 line 18), each of the three base stations comprising a plurality of detectors for detecting the RF signals and deriving time difference of arrival information based on the beacon signal and the RF signals, said controller determining locations of said objects based on said time difference of arrival information (abstract, fig. 2, col. 9 line 43 thru col. 10 line 13). Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the Chen et al. system with the teaching of Richards et al. of plurality of mobile devices transmit RF signals to at least three base stations in order to determine locations of the objects to keep them in control monitoring.

Regarding claim 19, this claim is rejected for the same reason as set forth in claim 10.

Regarding claim 20, this claim is rejected for the same reason as set forth in claim 11.

Regarding claim 21, this claim is rejected for the same reason as set forth in claim 12.

Allowable Subject Matter

5. Claims 5-6 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 5, the Chen et al. reference does not discloses or teaches or suggests:

- a) transmitting signals from a plurality of beacon transmitters to the at least three receivers, said plurality of beacon transmitters each being at a known location, each of the beacon transmitters having an independent local clock;
- b) calculating, at each of the at least three receivers, a plurality of time difference of arrival data based on respective signals from said plurality of beacon transmitters and the RF signal transmitted from the object.

Regarding claim 6, this claim is allowed for the reason of it is depended on allow claim 5.

Response to Arguments

Applicant's arguments filed 1/3/05 have been fully considered but they are not persuasive. Shown below are applicant's arguments and respective responses by examiner.

Argument I: with regard to claim 1, applicant argues by saying, Chen does not teach, disclose or suggest at least "calculating, at each of the at least three receivers, time difference of arrival information based on the signal from said at least one beacon transmitter and the RF signal transmitted from the object" as recited in claim 1.

Response I: examiner respectfully disagrees with the argument. In that, first, as provided in claim 1, time difference of arrival is calculated at each of the at least three receivers, but no relationship is established between the values calculated at each of the at least three receivers. The determination of the location of the object in question is made based on the time difference of arrival information, which could be the value calculated at any one of the at least three receivers. There is no clear evidence in claim 1 that shows the three calculated values from the at least three receivers were used as location determining information. Hence, the calculated values from any two of the at least three receivers can be considered as redundant. Consequently, the question resolves itself into determining a location of an object by using time difference arrival of two signals (a beacon and RF signals) and a single receiver and two transmitters (RF transmitter and a beacon transmitter). Therefore, the argument based on the at least three receivers is moot. Second, as far as the teaching/disclosure of Chen is concerned,

the reference shows that a location of a beacon signal transmitting device could be determined/ascertained at a plurality of cell sites based on time difference of arrival information, which is functionally the same as claim 1. Furthermore, the Chen reference advantageously provides location of an object determination based on two one transmitter transmitting plural signals as oppose to two transmitters, which could be more complex and expensive.

Argument II: with regard to claim 1, applicant further argues by saying, since Chen teaches a system in which the location of a mobile transceiver, that transmits a predetermined beacon signal for calculating location, has to be determined, Chen's mobile transceiver cannot qualify as the claimed beacon transmitter, which is at a known location, as recited in claim 1.

Response II: examiner respectfully disagrees with the argument. In that the location of Chen's mobile transceiver can be known or unknown (based on the wish of the user) (please see "882 (col. 2, lines 8-61).

Argument III: further with regard to claim 1, and in addition to claim 13, applicant argues by saying Chen does not teach/disclose calculating time difference of arrival based up on a signal from the beacon transmitter and an RF signal from the object whose location is to be determined, as recited in the above claims.

Response III: examiner again respectfully disagrees. In that Chen determines a location of a transceiver based on a beacon signal from the transceiver and RF signal/s from a cell site/cell sites, thereby advantageously removing the need for another RF

signal in order to arrive the same result as claimed by applicant. Hence, the argument is moot.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meless N. Zewdu whose telephone number is (571) 272-7873. The examiner can normally be reached on 8:30 am to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on (571) 272-7872. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Meless Zewdu *M. Z.*
Examiner


WILLIAM TROST
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

20 May 2005.